

CLAIMS

1. An electric plant for high voltage consisting of one or more motors, each comprising at least one winding, characterized in that the winding of at least one of the electric motors comprises an insulation system comprising at least two semiconducting layers, each layer constituting essentially an equipotential surface, and intermediate solid insulation between the layers.

2. A plant as claimed in claim 1, ~~characterized in~~ ^{wherein} at least one motor has one or more connection voltages.

3. A plant as claimed in claim 1 or 2, characterized in that at least one of the layers has substantially the same coefficient of thermal expansion as the solid insulation.

4. A plant as claimed in any of claims 1-3, characterized in that all transformation of substantial power is arranged to take place in the same electric motor.

5. A plant as claimed in any of claims 1-4, characterized in that the insulation is built up of a cable (6) intended for high voltage, comprising one or more current-carrying conductors (31) surrounded by at least two semiconducting layers (32, 34) with intermediate insulating layers (33) of solid insulation.

6. A plant as claimed in claim 5, characterized in that the innermost semiconducting layer (32) is at substantially the same potential as the conductor(s) (31).

7. A plant as claimed in either claim 5 or claim 6, characterized in that one of the outer semiconducting layers (34) is arranged to form essentially an equipotential surface surrounding the conductor(s) (31).

8. A plant as claimed in claim 7, ~~characterized in~~ ^{wherein} said outer semiconducting layer (34) is connected to a predefined potential.

9. A plant as claimed in claim 8, ~~characterized in~~ ^{wherein} the predefined potential is earth potential.

10. A plant as claimed in any of claims 5-9, characterized in that at least two of said layers have substantially the same coefficient of thermal expansion.

11. A plant as claimed in any of claims 5-7, characterized in that the current-carrying conductor comprises a plurality of strands, only a few of the strands not being insulated from each other.

5 12. A plant as claimed in any of claims 1-11, characterized in that the winding consists of a cable comprising one or more current-carrying conductors (2), each conductor consisting of a number of strands, an inner semiconducting layer (3) being arranged around each conductor, an insulating layer (4) of solid
10 insulation being arranged around each inner semiconducting layer (3) and an outer semiconducting layer (5) being arranged around each insulating layer (4).

13. A plant as claimed in claim 12, ~~characterized in~~
wherein ~~that~~ the cable also comprises a metal screen and a sheath.

Substant
14. A plant as claimed in any of the preceding claims, characterized in that the stator of the motor is cooled at earth potential by means of a flow of gas and/or liquid.

15. A plant as claimed in any of the preceding claims, characterized in that the high-voltage cables (6) have a
20 conductor area of between 40 and 3000 mm² and have an outer cable diameter of between 10 and 250 mm.

16. A plant as claimed in any of the preceding claims, characterized in that the start current and/or fault or current for the rotating electric motor(s) is arranged to be
25 limited by an electric static machine, i.e. a reactor/inductor, which is temporarily and/or permanently connected in series with the armature winding of the rotating electric machine (Figure 4).

17. A plant as claimed in any of the preceding claims, characterized in that the neutral point of at least one
30 motor is earthed via an impedance.

18. A plant as claimed in any of the preceding claims, characterized in that the neutral point of at least one motor is directly connected to earth.

19. A plant as claimed in any of the preceding claims,
35 characterized in that the motor is arranged to operate as producer of reactive power with temporarily large overload capacity.

20. A plant as claimed in any of the preceding claims, characterized in that the motor is arranged to be
40 connected to a distribution network or transmission network via

coupling elements and without any step-down transforming of the voltage level.

21. A plant as claimed in any of the preceding claims, characterized in that the motor is arranged to be
5 connected to a distribution network or transmission network having a supply voltage in excess of 36 kV.

22. A plant as claimed in any of the preceding claims, characterized in that the winding of the motor is arranged for self-regulating field control and lacks auxiliary
10 means for control of the field.

~~23. An electric plant for high voltage consisting of one or more motors, each of which comprises at least one winding, characterized in that the winding of at least one of the electric motors comprises an insulation system which, as regards
15 its thermal and electrical properties, permits a voltage level in excess of 36 kV.~~

~~24. An electric plant as claimed in claim 23, characterized in that said motors includes the features defining the plant claimed in any of claims 1-21.~~

~~20 25. An electric motor comprising at least one winding, characterized in that the winding comprises an insulation layer including at least two semiconducting layers, each semi-conductor layer constituting essentially an equipotential surface, and intermediate solid insulation.~~

~~25 26. A motor as claimed in claim 25, characterized in that its stator winding is divided into two parts in order to achieve partial winding start.~~

~~27. A motor as claimed in claim 25 or claim 26, characterized in that it has one or more connection
30 voltages.~~

~~28. A motor as claimed in any of claims 25-27, characterized in that it includes the features defined for the motor in the plant as claimed in any of claims 2-24.~~

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